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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/604,191	06/30/2003	GOVINDARAJAN NATARAJAN	FIS920030057US1	3161
29505	7590	03/30/2005		
DELIO & PETERSON, LLC 121 WHITNEY AVENUE NEW HAVEN, CT 06510			EXAMINER MAYES, MELVIN C	
			ART UNIT	PAPER NUMBER
			1734	
DATE MAILED: 03/30/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/604,191	Applicant(s) NATARAJAN, GOVINDARAJAN	
	Examiner Melvin Curtis Mayes	Art Unit 1734	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) 23-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |  |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/2, 17/03, 6/30/03</u> . | 6) <input type="checkbox"/> Other: ____  |

*HL*

**DETAILED ACTION**

***Election/Restrictions***

(1)

Applicant's election with traverse of Claims 1-22 in the reply filed on December 27, 2004 is acknowledged. The traversal is on the ground(s) that the inventions are not independent and distinct because a search of the subject matter of Group I would require a search of the subject matter of Group II. This is not found persuasive because the subject matter of Group I does not require search of all types of intermediate greensheet product having a greensheet and support film with openings which can be made by method such as described in the restriction requirement or other methods such as forming the openings from the side of the greensheet opposite that attached to the support film.

The requirement is still deemed proper and is therefore made FINAL.

***Claim Rejections - 35 USC § 112***

(2)

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

(3)

Claims 18-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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Claim 18 recites the limitation "said first peelable support film" in line 2. There is insufficient antecedent basis for this limitation in the claim. Claim 15 claims a "peelable support film."

Claim 21 recites the limitation "said stacked layers" in line 5. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 102***

(4)

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

***Claim Rejections - 35 USC § 103***

(5)

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

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1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

(6)

Claims 1, 4-6, 8-11, 13, 15 and 16 are rejected under 35 U.S.C. 102(b) as anticipated by JP 2-136204 Abstract.

JP 2-136204 Abstract discloses a method of perforating ceramic green sheets comprising: bonding an aluminum foil of 10-20  $\mu\text{m}$  thickness to a green sheet; perforating the foil and green sheet by a punch traversing through the foil then the green sheet, wherein the foil is of strength to prevent stretching of the green sheet; and removing the foil from the green sheet (Fig. 1).

(7)

Claims 1, 4-6, 8-11, 13, 15 and 16 are rejected under 35 U.S.C. 102(b) as anticipated by JP 6-275953.

JP 6-275953 discloses a method comprising: laminating a plastic film on a ceramic green sheet; punching a hole through the film and green sheet; filling the hole with conductor; and peeling the film. The film prevents deformation of the green sheet during punching and comprises a polyester film with dispersed ceramic particles and of thickness of 25-50  $\mu\text{m}$  (Abstract and computer translation).

(8)

Claims 1, 2, 4-13 and 15-17 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Inasaka 5,271,150.

Inasaka discloses a method comprising: casting a ceramic greensheet on a carrier film 2 of thickness of 100  $\mu\text{m}$ ; fixing or bonding an organic resin film 3 of polypropylene, polyethylene or polypropylene and of thickness of 30-100  $\mu\text{m}$  (1-4 mils) to the surface of the greensheet; fixing the carrier film to a frame; forming through holes through the resin film, greensheet and carrier film; filling the through holes with paste; and removing the organic resin film. The resin film suppresses changes in dimensions of the greensheet during the period in which various processes are carried out (col. 1, line 38 – col. 5, line 33).

Further, by fixing or bonding a resin film of 30-100  $\mu\text{m}$  thickness on the greensheet to suppress changes in dimensions of the greensheet during the period in which various processes are carried out, a removable or peelable support film which prevents damage to the substrate (green sheet) by constraining movement during formation of the openings (holes) is obviously attached to the green sheet, as claimed.

Further, by fixing the carrier film to a frame, a frame is obviously attached to the second surface of the greensheet, as claimed in Claims 2, 7 and 17.

(9)

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over either JP 6-275953 or Inasaka as applied to claim 1 above, and further in view of JP 7-30252 Abstract.

JP 7-30252 Abstract teaches that to peel a plastic film from a green sheet so that the film may not take away conductive paste from via holes in the green sheet, a winding roller is engaged with one end of the film and is rolled on the green sheet to peel and remove the film.

It would have been obvious to one of ordinary skill in the art to have modified the method of either JP 6-275953 or Inasaka for forming and filling holes in a green sheet by peeling the film from the green sheet by using a roller rolled on the green sheet, as taught by JP '252 Abstract, so that the film may not take away conductive paste from the holes in the green sheet. By using a roller rolled on the green sheet to peel the film, the film is removed by peeling in a direction substantially parallel to the substrate (green sheet), as claimed.

(10)

Claims 1, 2, 4-8, 10, 11, 13 and 15-17 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over JP 4-102396 Abstract.

JP 4-102396 Abstract discloses a method comprising: adhering a polyester film to a green sheet 2 by adhesive; adhering the green sheet to a frame 3; and punching holes through the film and green sheet.

Further, by adhering a polyester film to the green sheet by adhesive, a removable or peelable support film which prevents damage to the substrate (green sheet) by constraining movement during formation of the opening (hole) is obviously attached to the green sheet, as claimed.

(11)

Claims 1, 4-6, 8, 10, 11, 13, 15 and 16 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over JP 1-202405 Abstract.

JP 1-202405 Abstract discloses a method of forming a via hole comprising: providing a laminated body of green sheet 1 and carrier film 2; punching a hole in the carrier film and green sheet; filling the hole with paste; and removing the carrier film.

Further, by providing a laminated body of green sheet and carrier film, a removable or peelable support film which prevents damage to the substrate (green sheet) by constraining movement during formation of the opening (hole) is obviously attached to the green sheet, as claimed.

(12)

Claims 14 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 1-202405 Abstract as applied to claims 6 and 15 above, and further in view of Anbo et al. 6,413,340.

Anbo et al. teach that to improve peelability of a substrate film from a green sheet to prevent defects such as breaking, crease formation and stretching, the green sheet is provided with a snap groove. As shown in the Figure 4, the snap groove is an angled groove provided in the green sheet (Abstract).

It would have been obvious to one of ordinary skill in the art to modified the method of JP '405 Abstract for forming and filling holes in a green sheet by providing the green sheet with an angled snap groove, as taught by Anbo et al., to improve peelability of the carrier film.



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(substrate film) from the green sheet to prevent defects such as breaking, crease formation and stretching.

(13)

Claims 1, 4-6, 8-11, 13, 15, 16, 18 and 19 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Humenik et al. 6,045,714.

Humenik et al. disclose a method of forming vias comprising: covering a green sheet 10 with a thin plastic sheet mask 12 of thickness of 1-5 mils by using adhesive; punching a via opening through the mask and green sheet; applying a backing member 14 to the mask for filling the via with paste; and removing the mask (col. 2, line 65- col. 4, line 40).

Further, by adhering a plastic sheet mask of 1-5 mils thickness to the green sheet by adhesive, a removable or peelable support film which prevents damage to the substrate (green sheet) by constraining movement during formation of the opening (hole) is obviously attached to the green sheet, as claimed.

(14)

Claims 6, 8 and 11-13 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over JP 2-310996 Abstract.

JP 2-310996 Abstract discloses a method comprising: coating a green sheet with an organic binder film; punching holes; placing a screen on the green sheet and filling the holes with paste. The organic binder film reduces the dimensional deformation of the green sheet when paste is screen printed on the sheet.

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Further, by coating the green sheet with an organic binder film to reduce the dimensional deformation of the green sheet when paste is screen printed on the sheet, a support film is obviously attached to the green sheet by casting and constrains movement of the green sheet to prevent damage thereto, as claimed.

***Allowable Subject Matter***

(15)

Claims 20 and 21 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

***Conclusion***

(16)

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The references disclose forming holes in a green sheet using an attached film or attaching a green sheet to a frame.


(17)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melvin Curtis Mayes whose telephone number is 571-272-1234. The examiner can normally be reached on Mon-Fri 7:30 AM - 4:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Fiorilla can be reached on 571-272-1187. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Melvin Curtis Mayes  
Primary Examiner  
Art Unit 1734

MCM  
March 23, 2005